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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,372	02/23/2005	Yasuhiro Omura	122800	5188

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EXAMINER

HASAN, MOHAMMED A

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/525,372

Applicant(s)

OMURA ET AL.

Examiner

Mohammed Hasan

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-115 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 71-115 is/are allowed.
- 6) ☒ Claim(s) 44,45,51-54,60-63,69 and 70 is/are rejected.
- 7) ☒ Claim(s) 46-50,55-59 and 64-68 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/30/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt of acknowledged of papers submitted under 35 U.S.C. 119 (a) – (d), which papers have placed in the file.

Oath/Declaration

2. Oath and declaration filed on is accepted.

Information Disclosure Statement

3. The prior art documents submitted by applicant in the Information Disclosure Statement filed on 6/30/2005 have all been considered and made of record (note the attached copy of form PTO – 1449).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 44,45,51-54,60-63,69, and 70 are rejected under 35 U.S.C. 102(e) as being anticipated by Dodoc et al (2005/0068499 A1).

Regarding claim 44, Dodoc et al discloses (refer to figure 2) a projection optical system (20) for projecting an image of a first plane onto a second plane comprising: a boundary lens (L5) and at least one layer of immersion liquid (34) between the boundary lens and the second plane, a boundary lens having a first plane side optical surface shaped such that for light projected onto the second plane through the boundary lens the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle (as shown in figure 2) within the boundary lens (paragraph 0071 and paragraph 0076).

Regarding claim 45, Dodoc et al discloses, at least one positive lens (L605) having aspherical surface (paragraph 0122).

Regarding claim 51, Dodoc et al discloses, a projection optical system for forming an image of a pattern formed on a mask on a photosensitive substrate set on the second plane (paragraph 0005).

Regarding claim 52, Dodoc et al discloses, an exposing method comprising the steps of illuminating a mask set on the first plane and projecting and exposing a pattern image formed on mask on a photosensitive substrate set on the second plane via projection optical system (paragraph 0005).

Regarding claim 53, Dodoc et al discloses (refer to figure 2) a projection optical system (20) for projecting an image of a first plane onto a second plane comprising: a

Art Unit: 2873

boundary lens (L5) and at least one layer of immersion liquid (34) between the boundary lens and the second plane, a boundary lens having a first plane side optical surface shaped such that for light projected onto the second plane through the boundary lens the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle (as shown in figure 2) within the boundary lens (paragraph 0071 and paragraph 0076).

Regarding claim 54, Dodoc et al discloses, at least one positive lens (L605) having aspherical surface (paragraph 0122).

Regarding claim 60, Dodoc et al discloses, a projection optical system for forming an image of a pattern formed on a mask on a photosensitive substrate set on the second plane (paragraph 0005).

Regarding claim 61, Dodoc et al discloses, an exposing method comprising the steps of illuminating a mask set on the first plane and projecting and exposing a pattern image formed on mask on a photosensitive substrate set on the second plane via projection optical system (paragraph 0005).

Regarding claim 62, Dodoc et al discloses (refer to figure 2) a method of projecting an image of a first plane onto a second plane including the steps of: passing light having a first marginal ray converge angle to a boundary lens passing light having a second marginal ray converge angle through the boundary lens and passing light from the boundary lens through a layer of immersion liquid (34) to the second plane where a first marginal ray converge angle is greater than second marginal ray converge angle (paragraph 0071 and paragraph 0076).

Regarding claim 63, Dodoc et al discloses, at least one positive lens (L605) having aspherical surface (paragraph 0122).

Regarding claim 69, Dodoc et al discloses, a projection optical system for forming an image of a pattern formed on a mask on a photosensitive substrate set on the second plane (paragraph 0005).

Regarding claim 70, Dodoc et al discloses, an exposing method comprising the steps of illuminating a mask set on the first plane and projecting and exposing a pattern image formed on mask on a photosensitive substrate set on the second plane via projection optical system (paragraph 0005).

Allowable Subject Matter

5. Claims 71-115 are allowed.

6. The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in a combination fails to anticipate or fairly suggest the limitations of the independent claims, in such a manner that rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims 71 and 94, for example, which include an optical path having a plurality of lenses including a boundary lens which is closest to the second plane and the first plane side surface has a positive refractive power and an optical path for an atmosphere having refractive index of 1 and the optical path between

Art Unit: 2873

the boundary lens and second plane is filled with medium having refractive index is larger than 1.1.

7. Claims 46-50,55-59, and 64-68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show, a first positive powered lens element proximal to the boundary lens having at least one aspheric optical surface and a second positive power lens between the first positive powered lens element and boundary lens having at least one aspheric optical surface and a double-Gauss anastigmat arranged to reduce spherical aberration including a third positive powered lens element, a first negative powered lens element, a second negative powered lens element and a fourth positive powered lens element.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matsuyama (6,166,865) discloses a projection optical system and exposure apparatus.

Pierrat et al (6,961,186 B2) discloses a contact printing using a magnified mask image.

Akimoto (2006/0028630 A1) discloses a liquid immersion exposure apparatus, method of controlling the same and device manufacturing method.

Art Unit: 2873

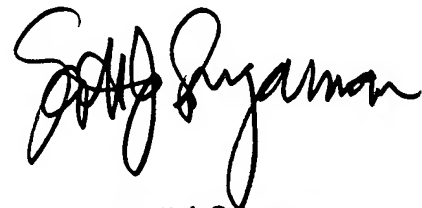
Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L Mack can be reached on (571) 272- 2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH
May 9, 2006

A handwritten signature in black ink, appearing to read "Scott J. Sugarman". The signature is stylized with a large, looping "S" and a cursive "J".

Scott J. Sugarman
Primary Examiner